(iv) Not to exceed 0.02 milligram per square inch of food contact surface when extracted for 2 hours at 65.6 °C (150 °F) with 50 percent ethanol.

[42 FR 14572, Mar. 15, 1977, as amended at 50 FR 20748, May 20, 1985; 52 FR 20069, May 29, 1987]

§ 177.1670 Polyvinyl alcohol film.

Polyvinyl alcohol film may be safely used in contact with food of the types identified in § 176.170(c) of this chapter, table 1, under Types V, VIII, and IX, in accordance with the following prescribed conditions:

(a) The polyvinyl alcohol film is produced from polyvinyl alcohol having a minimum viscosity of 4 centipoises when a 4-percent aqueous solution is tested at 20 °C.

(b) The finished food-contact film for use in contact with Food Types V or IX, when extracted with the solvent characterizing the type of food and under the conditions of time and temperature characterizing its intended use as determined from tables 1 and 2 of § 176.170(c) of this chapter, yields total extractives not to exceed 0.078 milligram per square centimeter (0.5 milligram per square inch) of food-contact surface when tested by ASTM method F34–76 (Reapproved 1980), ''Standard Test Method for Liquid Extraction of Flexible Barrier Materials,'' which is incorporated by reference. Copies may be obtained from the American Society for Testing Materials, 1916 Race St., Philadelphia, PA 19103, or may be examined at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC 20408.

(c) The finished food-contact film shall not be used as a component of food containers intended for use in contact with water.

[42 FR 14572, Mar. 15, 1977, as amended at 49 FR 10110, Mar. 19, 1984]

§ 177.1680 Polyurethane resins.

The polyurethane resins identified in paragraph (a) of this section may be safely used as the food-contact surface of articles intended for use in contact with bulk quantities of dry food of the type identified in § 176.170(c) of this chapter, table 1, under Type VIII, in accordance with the following prescribed conditions:

(a) For the purpose of this section, polyurethane resins are those produced when one or more of the isocyanates listed in paragraph (a)(1) of this section is made to react with one or more of the substances listed in paragraph (a)(2) of this section:

(1) Isocyanates:

Bis(isocyanatomethyl) benzene (CAS Reg. No. 25854–16–4).
Bis(isocyanatomethyl) cyclohexane (CAS Reg. No. 38661–72–2).
4,4′-Diisocyanato-3,3′-dimethylbiphenyl (bitolylene diisocyanate).
Diphenylmethane diisocyanate.
Hexamethylene diisocyanate.
3-Isocyanatomethyl - 3,5,5 - trimethylcyclohexyl isocyanate.
4,4-Methylenebis(cyclohexyl isocyanate).
Toluene diisocyanate.

(2) List of substances:

Adipic acid.
1,4-Butanediol.
1,3-Butylene glycol.
1,4–Cyclohexane dimethanol (CAS Reg. No. 105–08–8).
2,2-Dimethyl-1,3-propanediol.
Ethylene glycol.
1,6–Hexanediol (CAS Reg. No. 629–11–8).α–Hydro–ω–hydroxypoly(oxy–1,4–butanediyl) (CAS Reg. No. 25190–06–1).
α-Hydro-*omega*-hydroxypoly (oxytetramethylene).
α,α′-(Isopropylidenedi-*p*-phenylene)bis[*omega*-hydroxypoly (oxypropylene)(3–4 moles)], average molecular weight 675.
Maleic anhydride.
Methyl oxirane polymer with oxirane (CAS Reg. No. 9003–11–6).
Methyl oxirane polymer with oxirane, ether with 1,2,3–propanetriol (CAS Reg. No. 9082–00–2).
α,α′α″,α‴-Neopentanetetrayltetrakis [*omega*-hydroxypoly (oxypropylene) (1–2 moles)], average molecular weight 400.
Pentaerythritol-linseed oil alcoholysis product.
Phthalic anhydride.
Polybutylene glycol.
Polyethyleneadipate modified with ethanolamine with the molar ratio of the amine to the adipic acid less than 0.1 to 1.
Poly(oxycarbonylpentamethylene).
Polyoxypropylene ethers of 4.4′-isopropylidenediphenol (containing an average of 2–4 moles of propylene oxide).
Polypropylene glycol.
α,α′,α″-1,2,3-Propanetriyltris [*omega*-hydroxypoly (oxypropylene) (15–18 moles)], average molecular weight 3,000.
Propylene glycol.

α,α′,α″-[Propylidynetris (methylene)] tris [*omega*-hydroxypoly (oxypropylene) (minimum 1.5 moles)], minimum molecular weight 400.
α-[ρ(1,1,3,3-Tetramethylbutyl) - phenyl]-*omega*-hydroxypoly(oxyethylene) (5 moles), average molecular weight 425.
Trimethylol propane.

(b) Optional adjuvant substances employed in the production of the polyurethane resins or added thereto to impart desired technical or physical properties may include the following substances:

List of substances	Limitations
1-[(2-Aminoethyl)amino]2-propanol	As a curing agent.
1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride	As a preservative.
Colorants used in accordance with § 178.3297 of this chapter..	
Dibutyltin diacetate	As a catalyst.
Dibutyltin dichloride	Do.
Dibutyltin dilaurate	Do.
N,N-Dimethyldodecylamine	Do.
N-Dodecylmorpholine	Do.
a,a′-[Isopropylidenebis[*p*-phenyleneoxy(2-hydroxytrimethylene)]]bis[*omega*-hydroxypoly-(oxyethylene) (136–170 moles)], average molecular weight 15,000.	As a stabilizer.
4,4′-Methylenedianiline	As a curing agent.
1,1′,1″-Nitrilotri-2-propanol	Do.
2,2′-(*p*-Phenylenedioxy) diethanol	Do.
Polyvinyl isobutyl ether.	
Polyvinyl methyl ether.	
Soyaalkyd resin	Conforming in composition with § 175.300 of this chapter and containing litharge not to exceed that residual from its use as the reaction catalyst and creosol not to exceed that required as an antioxidant.
Tetrakis [methylene–(2,5–di-*tert*-butyl-4-hydroxyhydrocinnamate)]methane (CAS Reg. No. 6683–19–8).	Stabilizer.
N,N,N′N′-Tetrakis (2-hydroxypropyl)ethylenediamine	As a curing agent.
Triethanolamine	Do.
Trimethyleneglycol di (*p*-aminobenzoate) (CAS Reg. No. 57609–64–0).	As a curing agent.

(c) An appropriate sample of the finished resin in the form in which it contacts food, when subjected to ASTM method D968–81, ''Standard Test Methods for Abrasion Resistance of Organic Coatings by the Falling Abrasive Tester,'' which is incorporated by reference (copies may be obtained from the American Society for Testing Materials, 1916 Race St., Philadelphia, PA 19103, or may be examined at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC 20408), using No. 50 Emery abrasive in lieu of Ottawa sand, shall exhibit an abrasion coefficient of not less than 20 liters per mil of film thickness.

[42 FR 14572, Mar. 15, 1977, as amended at 46 FR 57033, Nov. 20, 1981; 49 FR 10110, Mar. 19, 1984; 50 FR 51847, Dec. 20, 1985; 56 FR 15278, Apr. 16, 1991; 56 FR 42933, Aug. 30, 1991]

§ 177.1810 Styrene block polymers.

The styrene block polymers identified in paragraph (a) of this section may be safely used as articles or as components of articles intended for use in contact with food, subject to provisions of this section.

(a) For the purpose of this section, styrene block polymers are basic polymers manufactured as described in this paragraph, so that the finished polymers meet the specifications prescribed in paragraph (b) of this section, when tested by the methods described in paragraph (c) of this section.

(1) Styrene block polymers with 1,3-butadiene are those produced by the catalytic solution polymerization of styrene and 1,3-butadiene.

(2) Styrene block polymers with 2-methyl-1,3-butadiene are those produced by the catalytic solution polymerization of styrene and 2-methyl-1,3-butadiene.

(3) Styrene block polymers with 1,3-butadiene, hydrogenated are those produced by the catalytic solution polymerization of styrene and 1,3-butadiene, and subsequently hydrogenated.

(b) *Specifications:*